

REMARKS/ARGUMENTS

Applicants would like to thank the Examiner for the careful consideration given the present application. The application has been carefully reviewed in light of the Office action.

Claims 5-8, 11 and 12 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite. The current amendment addresses the antecedent basis issues raised by the Office action. Applicants respectfully request reconsideration and withdrawal of the rejections under 35 U.S.C. 112, in view of the current amendment.

Claims 1-12 were rejected under 35 U.S.C. 103(a) as being unpatentable over Caro (USPN 5,830,131). Claim 1 recites, “an arithmetic unit for obtaining thickness change between two arbitrary positions among a plurality of positions with said vascular wall from a phase detection signal determined at said phase detector, and for obtaining elastic modulus of said vascular wall from said thickness change...” Therefore, claim 1 requires an arithmetic unit for obtaining an elastic modulus of a vascular wall from a thickness *change* (e.g., Δh) of the vascular wall.

Caro teaches that an arterial wall thickness h can be determined, and that the arterial elastic modulus E can be determined based on the arterial wall thickness h (23:18-34). The arterial wall thickness h described in Caro is not a thickness *change*, as required by claim 1, but merely a thickness. The only arterial thickness change taught by Caro is a change over a lengthy period of time, such as years (23:35-36). However, Caro does not teach using this change over a lengthy period of time to determine the elastic modulus of the vascular wall.

In rejecting the claims as obvious, the Office action notes that “Caro discloses a piezoelectric sensor that senses arterial wall displacement and position.” However, neither sensing arterial wall displacement nor sensing arterial wall position would suggest a thickness

change of the wall. The noted teachings may suggest movement of the arterial wall, but not a thickness change of the wall. Further, even assuming, *arguendo*, that Caro's system could sense a thickness change of an arterial wall, there is no suggestion to use such a thickness change to calculate an elastic modulus of the wall. Caro provides an explicit equation (19) at column 23, line 34, for determining the arterial elastic modulus E. Caro's equation (19) uses the arterial wall thickness h, but not a thickness change (as required by claim 1).

Claim 1 further recites, "said display unit displaying changes over time of elastic modulus of said vascular wall when artery is avascularized and the avascularization is then stopped." The Examiner asserts that these limitations would have been obvious because "Caro discloses that the thickness of a vessel, modulus or the vessel radius can change and there is a need to optimize treatments based on these parameters." However, it does not logically follow from the need to optimize treatments based on the noted parameters to display changes in elastic modulus over time wall when artery is avascularized and the avascularization is then stopped. Applicants can find no teaching in Caro that discloses or otherwise renders foreseeable "displaying changes over time of elastic modulus of said vascular wall when artery is avascularized and the avascularization is then stopped."

In view of the above-discussed deficiencies of Caro, applicants respectfully submit that claim 1 is allowable over Caro. The arguments provided above are also applicable to claims 2-12.

In light of the foregoing, it is respectfully submitted that the present application is in condition for allowance and notice to that effect is hereby requested. If it is determined that the application is not in condition for allowance, the Examiner is invited to initiate a telephone interview with the undersigned attorney to expedite prosecution of the present application.

If there are any fees resulting from this communication, please charge same to our
Deposit Account No. 16-0820, our Order No.: NIHE-40596.

Respectfully submitted,
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Date: August 13, 2009